

# REMARKS ON THE MEASUREMENT, VALUATION, AND REPORTING OF INTANGIBLE ASSETS

## 1. INTRODUCTION

Intangible assets are both large and important. However, current financial statements provide very little information about these assets. Even worse, much of the information that is provided is partial, inconsistent, and confusing, leading to significant costs to companies, to investors, and to society as a whole. Solving this problem will require on-balance-sheet accounting for many of these assets as well as additional financial disclosures. These gains can be achieved, but only if users of financial information insist upon improvements to corporate reporting.

## 2. THE MAGNITUDE OF INTANGIBLE ASSETS

In a recent paper, Leonard Nakamura of the Federal Reserve Bank of Philadelphia uses three different approaches to estimate the corporate sector's amount of investment in intangible assets.<sup>1</sup> The first approach is based on accounting for the investments in research and development (R&D), software, brand development, and other intangibles. The second uses the wages and salaries paid to "creative workers," those workers who generate intangible assets. The third approach, which is quite innovative, examines the changes in operating margins of firms—the difference between sales and the cost of sales.

Baruch Lev is the Philip Bardes Professor of Accounting and Finance at New York University's Stern School of Business.

Dr. Nakamura argues, persuasively, that the major reason for improvement in reported gross margin is the capture of value from intangible assets, such as cost savings from Internet-based supply chains.

Although all three approaches yield slightly different estimates of the value of investments in intangible assets, the estimates converge around \$1 trillion in 2000—a huge level of investment, almost as much as the corporate sector's investment in fixed assets and machinery that year. Dr. Nakamura estimates the capitalized value of these investments using a quite conservative depreciation rate. His conclusion is that the net capitalized value is about \$6 trillion, a significant portion of the total value of all stocks in the United States.

One way to determine if this estimate of the value of intangible assets is reasonable is to compare the market values of companies with the book values (the net assets) that appear on their balance sheets to see if there is a large unmeasured factor. Data for the S&P 500 companies, which account for about 75 percent of the total assets of the U.S. economy, reveal that since the mid-1980s, there has been a large increase in the ratio of market value to book value, albeit with very high volatility. At its peak in March 2000, the ratio of market value to book value was 7.5. At the end of August 2002, it was 4.2, and it may still go down. However, even if the ratio fell to 4 or even 3, it would be sufficiently higher than it was in prior periods, and high enough to confirm that an amount of value equal to between one-half and two-thirds of corporate market values reflects the value of intangible assets.

The views expressed are those of the author and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.

Recently, Federal Reserve Chairman Alan Greenspan has been discussing what he calls “conceptual assets.” In testimony to the House of Representatives in February 2002, he noted that the proportion of our GDP that results from the use of conceptual, as distinct from physical, assets has been growing, and that the increase in value-added due to the growth of these assets may have lessened cyclical volatility. However, he then argued that physical assets retain a good portion of their value even if the reputation of management is destroyed, while intangible assets may lose value rapidly. The loss in value of intangible assets by Enron was noted by Chairman Greenspan. Two weeks later, a major article in the *Wall Street Journal* asked where all the intangible assets have gone, mentioning Enron and Global Crossing specifically.

To investigate this issue, I asked one of my Ph.D. students to review the financial reports of these firms. The result was astounding: these companies did not spend a penny on research and development. There is no mention of R&D in Enron’s last three annual reports. Expenditures to acquire technology, for brand enhancement and for trademarks, were tiny. Spending on new software was significant, but it was very small compared with spending on physical assets. To say that Enron had huge intangible assets that somehow disappeared blurs the difference between market value and book value due to “hype,” with the difference due to the creation of a true intangible asset.

### 3. THE MYTH OF “CONSERVATIVE ACCOUNTING”

Five or six years ago, when I began discussing the problems caused by the accounting system’s mismeasurement of investment in intangible assets, the common wisdom was that the immediate expensing of intangibles was good because it was “conservative.” (Conservative in the accounting sense means that you underestimate earnings and the value of assets.) However, the lives of the assets, their creation costs, and the cash flows generated have a time dimension, which is fixed. Therefore, if you are “conservative” in some periods, you will end up being “aggressive” (inflating earnings) in others.

The exhibit that I have included shows the results of a model that two colleagues and I developed that relates the rate of growth in R&D spending to three popular measures of company performance: return on equity, return on assets, and growth in earnings (what analysts call “momentum”).<sup>2</sup> The solid line in the exhibit shows corporate performance if the R&D spending is capitalized; the dashed line shows the

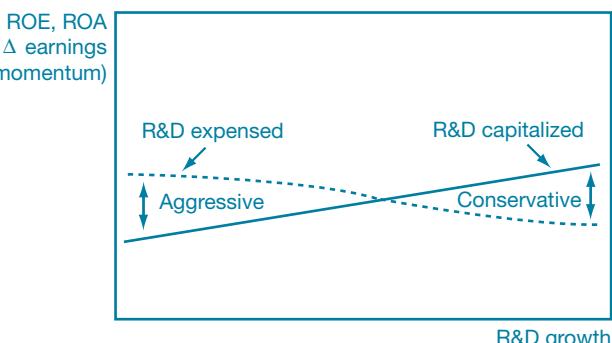
performance resulting from the immediate expensing of R&D or other intangibles.

As the model shows, companies with high growth rates of R&D spending report conservatively when they expense intangibles. However, companies with low growth rates actually report aggressively. For these companies, the reported levels of return on equity, the return on assets, and the growth in earnings *appear to be much better than they really are*. The inflection point occurs when the rate of spending growth is equal to the company’s cost of capital.

It is therefore a myth that the mismeasurement of profitability and assets due to the expensing of investment in intangibles results in conservative accounting. Expensing intangibles is conservative for some companies, aggressive for others, and erroneous for all. For example, in the pharmaceutical industry, many major firms have low (single-digit) rates of R&D growth. (Their R&D expenditures are high in absolute terms, but the rate of growth is low.) Because expenditures are not growing rapidly, adding R&D expenses to earnings and subtracting amortization expenses due to past R&D expenditures does not increase earnings by much. However, the capitalization of past R&D causes a large addition to total assets and hence to equity, the denominator of the return-on-equity ratio. Thus, reported return on equity is biased upward substantially, as much as 20 percentage points or more, for these companies.

The harm associated with failing to capitalize intangible assets is greater if managers manipulate R&D expenditures to meet profit goals. (Recall that it is the change in investment, rather than the level of investment, that causes much of the misstatement.) Several studies have concluded that this type of manipulation does occur. One study found that companies with CEOs who were close to retirement showed a decrease in

#### Reported Profitability and the Accounting Treatment of Intangibles



R&D expenditures, presumably because those CEOs did not care about the long-term consequences of the R&D cuts. Another study found that large decreases in R&D occurred when companies were close to issuing additional equity.

#### 4. RELATED ACCOUNTING PROBLEMS

As an exception to the general rule regarding intangible assets, Financial Accounting Standards Board (FASB) Statement 86 mandates the capitalization of software development costs incurred from the point of “technological feasibility.” However, many software companies are not following the rule. Companies that are very profitable, like Microsoft or Oracle, do not capitalize software expenditures, deferring profits to the future. Less profitable companies tend to capitalize significant amounts of software development. Thus, you have an accounting rule that is followed by some and not by others, making it very difficult for outsiders to rely on reported financial information.

In addition, the accounting methods for purchased intangible assets are inconsistent with the accounting methods for internally generated intangible assets. Expenditures to build a brand name are immediately expensed. Expenditures to purchase a brand name, either directly or while acquiring a company, are capitalized. Further confusing the issue, expenditures to acquire in-process R&D are expensed, even in arm’s-length transactions. The accounting rules for intangibles do not make much economic sense or common sense, and companies have been inconsistent in their application of the rules, creating significant mismeasurement and misreporting issues. To gauge the size of this problem, note that during the 1990s, thousands of acquisitions were made primarily to obtain technology. Cisco alone made close to seventy acquisitions in the late 1990s, in one case paying almost \$7 billion for a company that in its entire public existence had sales of \$15 million. Clearly, the acquisitions were not made for the chairs or buildings, but for the company’s intangible assets.

In 1998, I examined a sample of 380 companies and found that an average of 85 percent of the total acquisition price was expensed as in-process R&D. Two *Wall Street Journal* articles were written on this topic, and the Securities and Exchange Commission (SEC) started to take the issue seriously. Within a year, the rate of expensing decreased to 45 percent. Thus, management, at least then, had considerable flexibility and opportunities for manipulation.

For some types of investment in intangibles, financial reports leave us completely in the dark, even with respect to expenditures. For example, most companies do not report how much they spend on employee training, on brand enhancement, or on software technology. Few companies indicate how much they spend on the types of R&D undertaken, such as basic versus applied research.

#### 5. CONSEQUENCES

A consequence of the mismeasurement and deficient reporting of intangible assets is a significant deterioration in the information content of key financial statement items. To judge the information loss, Paul Zarowin and I estimated the information content of earnings announcements based upon the correlation between the announcements and the change in stock prices around the time of the announcements.<sup>3</sup> We found that there has been a constant decrease in the magnitude and stability of the role that earnings, the change in book values (net assets on the balance sheet), and operating cash flow announcements play in investors’ decisions. If equity prices reflect all the information that investors receive from all sources, the contribution made by earnings and other financial measures has been decreasing throughout the 1980s and 1990s. Furthermore, our paper shows that firms with significant changes in R&D spending are the ones for which the information deterioration is the worst.

Another clear indication of a deterioration in the information content of financial reports is that managers are feverishly looking for alternative measures of corporate performance for internal purposes. The need for alternatives explains the recent popularity of “balanced scorecard” systems, in which nonfinancial measures are added to financial measures in order to set goals and gauge performance.

A second consequence of the mismeasurement of intangible assets is a systematic undervaluation of companies that are intensive in intangibles. In one recent study, portfolios of companies were created based on R&D intensity.<sup>4</sup> The authors reasoned that if investors fully recognized and fully valued contemporaneous information, in efficient markets, the subsequent risk-adjusted (abnormal) returns of the portfolios should average to zero. What the authors (and others) found is that firms with high R&D expenditures relative to market values—particularly young companies that were not yet stellar performers—were

systematically undervalued relative to other firms. The risk-adjusted returns to portfolios of these companies were, two to four years later, systematically positive and very large—as much as 6 percent to 7 percent per year.

Systematic undervaluation means that the cost of capital of these companies is excessive; it is more difficult for these firms to finance R&D and other investments that create intangible assets. Several macroeconomic studies have shown that R&D investment in the United States is about half the optimal level, from a social point of view. To the extent that this under-investment is a result of a lack of information, this lack of information has serious social consequences.

Another consequence of the misreporting, or absence of reporting, of intangible assets is that gains are misallocated to insiders. David Aboody and I recently examined all insider transactions by corporate officers reported to the SEC from 1985 to 1999, measuring the gains to insiders between the time of the transaction and the time that the transaction was reported to the SEC.<sup>5</sup> (I should note that, in my view, it is difficult to understand why the SEC does not eliminate the lag between insider transactions and their reporting. Disclosure now takes, on average, close to a month. With today's electronic reporting systems, an electronic copy could go to the SEC, not the next day, but as soon as the transaction is completed.) Our study found that in R&D-intensive firms, the gains were four times larger than the gains to insiders in other firms. The reason, of course, is that there is huge information asymmetry in companies with high levels of R&D spending. Even more serious than the reallocation of gains from outside investors to insiders is a deterioration in the integrity of capital markets, which is a clear and serious social cost of this information asymmetry. To gauge the extent of the problem, recall that many people considered Enron a company with numerous intangible assets.

In another study, two colleagues and I recently ranked 3,000 companies by the amount of distortion in book value that resulted from the expensing of R&D. The portfolio of companies with the highest amount of distortion had a subsequent rate of return that was 15 percentage points higher than that of the portfolio of companies with average distortion and 30 percentage points higher than that of the portfolio of companies with the least distortion.

Even worse, in many cases, managers either do not have much better information themselves, or they are “managing by the numbers” in response to the feedback they receive from capital markets and financial analysts. Because financial analysts are often unaware of the importance of these issues, companies are underinvesting in intangible assets—an action that has a considerable social cost.

## 6. REMEDIES

To understand what can be done to improve the situation, it is important to discuss both “recognition” and “disclosure” issues. Recognition means that the item affects the balance sheet or the income statement; disclosure is the provision of information, usually in footnotes, without affecting the balance sheet or the income statement. To resolve the current problem, both more recognition and more disclosure are required.

The battle in the mid-1990s over accounting for stock options clearly shows the difference between recognition and disclosure. Managers vehemently objected to recognizing employee-manager stock options as an expense in the income statement. They won the battle, and the standard called only for footnote disclosure. Although extensive stock option information was disclosed in a large footnote in every financial report—Bears Stearns even provided its customers with a list of companies' earnings, adjusted to reflect the costs of stock options—a widespread underappreciation of the importance and costs of stock options still resulted.

To provide as much information with as much clarity as possible, I propose a new comprehensive balance sheet that recognizes the creation of those intangible assets to which you can attribute streams of benefits. A comprehensive balance sheet—like the comprehensive income statement, which is now required under Generally Accepted Accounting Principles—adds information to a financial statement (or, if investors wish to retain the previous balance sheet, it adds a new statement). With a comprehensive balance sheet, investors will have clear information about the company, both with and without the capitalization of intangible assets. The proposed capitalized intangibles will include R&D, patents, brands, and sometimes organizational capital.

However, this is not to say that disclosure is unimportant. Two colleagues and I have created a disclosure index for biotech companies, based on information in the companies' prospectuses regarding patents, the results of clinical tests, prospective market shares for their products, and other factors. We found that the index provided considerable additional information about future market performance. In another study, a Ph.D. student of mine examined the disclosures made by a sample of companies that acquired trademarks from other companies. The companies that disclosed their plans for using an acquired trademark and the likely prospects benefited from a significant market reaction, even after accounting for other variables. Similarly, disclosure of information about the success of R&D—such as citations to the company's patents, licensing royalties, and the success of clinical tests—would allow investors to value R&D differentially across companies.

and time periods, based upon the presence or absence of these signals.

To facilitate disclosure, we should create, via accounting regulation, a common language, so that meaningful comparisons of intangible assets can be made. Many companies are already providing information about consumer satisfaction. However, by the company's calculation, satisfaction is always near 100 percent. Without a common standard for calculation—a common language—the information is largely useless.

To see how a common language could be created, consider customer acquisition costs. A common definition—perhaps new customers who remain customers for at least two or three years—would allow us to measure the asset in a way that could be compared meaningfully across companies. Creating a common language is not intrusive and can decrease information asymmetry significantly.

In France, companies are required to disclose “innovation revenues,” those revenues that come from recently introduced products. Such revenues indicate the ability of a company to innovate and to bring the innovations to market quickly. Several studies by French economists have shown that this information is very valuable in predicting the future growth and productivity of companies. However, outside France, investors rarely receive any information on innovation revenues. In some cases, even managers themselves do not have this information.

In a recent book, I propose a Value Chain Blueprint, which brings all of these concepts together into a system that enables one to present more clearly the value-creation activities of a company.<sup>6</sup> The Value Chain Blueprint, which applies to the creation of tangible as well as intangible assets, shows how to measure the success of value-creation projects from the early stages of development through commercialization.

## 7. GOING FORWARD

I would like to sum up by posing a key question: How can we accomplish the main objective I have described today—namely, promoting improvements to the reporting of intangible assets?

Much depends on you. I work intimately with the FASB—which, by the way, is currently working on an intangibles disclosure project—and the accounting industry's other standard-setters. As they add items to the agenda and develop accounting rules and standards, these standard-setters solicit feedback. Managers, CEOs, and accountants from accounting firms usually comment extensively, because they are the individuals most directly affected by any changes. However, to the best of my knowledge, the FASB rarely hears from policymakers and those in charge of national income accounting—individuals who are interested in obtaining good, objective information. If users of financial information are to receive the information that they need, they must become more involved in accounting standard-setting.

The forces of the status quo are immense and are fighting against meaningful change, even today. The involvement of you and your colleagues can therefore make an important difference in the outcome.

## ENDNOTES

- |  |   |
|--|---|
| <p>1. See Nakamura (2001).</p> <p>2. See Lev, Sarath, and Sougiannis (1999).</p> <p>3. See Lev and Zarowin (1999).</p> | <p>4. See Chan, Lakonishok, and Sougiannis (2001).</p> <p>5. See Aboody and Lev (2000).</p> <p>6. See Lev (2001).</p> |
|--|---|

## REFERENCES

- |  |   |
|--|---|
| <p><i>Aboody, D., and B. Lev.</i> 2000. "Information Asymmetry, R&amp;D, and Insider Gains." <i>JOURNAL OF FINANCE</i> 55, no. 6 (December): 2747-66.</p> <p><i>Chan, L., J. Lakonishok, and T. Sougiannis.</i> 2001. "The Stock Market Valuation of Research and Development Expenditures." <i>JOURNAL OF FINANCE</i> 56, no. 6 (December): 2431-56.</p> <p><i>Lev, B.</i> 2001. <i>INTANGIBLES: MANAGEMENT, MEASUREMENT, AND REPORTING.</i> Washington, D.C.: Brookings Institution Press.</p> <p><i>Lev, B., B. Sarath, and T. Sougiannis.</i> 1999. "Reporting Biases Caused by R&amp;D Expensing and Their Consequences." Unpublished paper, New York University.</p> | <p><i>Lev, B., and P. Zarowin.</i> 1999. "The Boundaries of Financial Reporting and How to Extend Them." <i>JOURNAL OF ACCOUNTING RESEARCH</i> 37, no. 2 (autumn): 353-85.</p> <p><i>Nakamura, L.</i> 2001. "What Is the U.S. Gross Investment in Intangibles? (At Least) One Trillion Dollars a Year!" Federal Reserve Bank of Philadelphia Working Paper no. 01-15.</p> |
|--|---|

*The views expressed are those of the author and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System. The Federal Reserve Bank of New York provides no warranty, express or implied, as to the accuracy, timeliness, completeness, merchantability, or fitness for any particular purpose of any information contained in documents produced and provided by the Federal Reserve Bank of New York in any form or manner whatsoever.*